Chapter 10

Magnetic Resonance Imaging Units

Minimum Required Personnel Qualifications:

Level III (Advanced Radiological Systems Surveyor)

Testing Periodicity:

All units: Annually, upon acceptance and acceptance & after major repairs

Instrumentation:

1. Static magnetic field meter (Gauss meter)
2. Assorted single or multi-purpose phantoms provided by the MRI manufacturer or a third party vendor for image quality and artifact assessment. The final phantom inventory should be determined during installation planning and acceptance.

Testing Parameters:

Testing parameters and procedures are likely to be unit specific and should be determined during installation and acceptance. Periodic testing should address at the least the following parameters:

a. Resonance frequency
b. B_0 homogeneity
c. Signal to noise ratio
d. Image uniformity
e. Spatial linearity and resolution
f. Slice thickness, position, and separation
g. Phase related image artifacts
h. Laser hard copy image quality

References:

1. AAPM Report 20. *Site Planning for Magnetic Resonance Imaging Systems*, 1987.
2. AAPM Report 28. *Quality Assurance Methods and Phantoms for Magnetic Resonance Imaging*, 1990.
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4. ACMP Report 5. *Radiation Control and Quality Assurance Surveys: Magnetic Resonance Imaging, A Suggested Protocol*, 1989.
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6. Sprawls, P. and Bronskill, M.J. (eds), *The Physics of Magnetic Resonance Imaging*, 1992 AAPM Summer School Proceedings, 1992.
7. Dixon, R.L. (ed), *MRI: Acceptance Testing and Quality Control; The Role of the Clinical Medical Physicist*, 1988 AAPM Summer School Proceedings, 1988.
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